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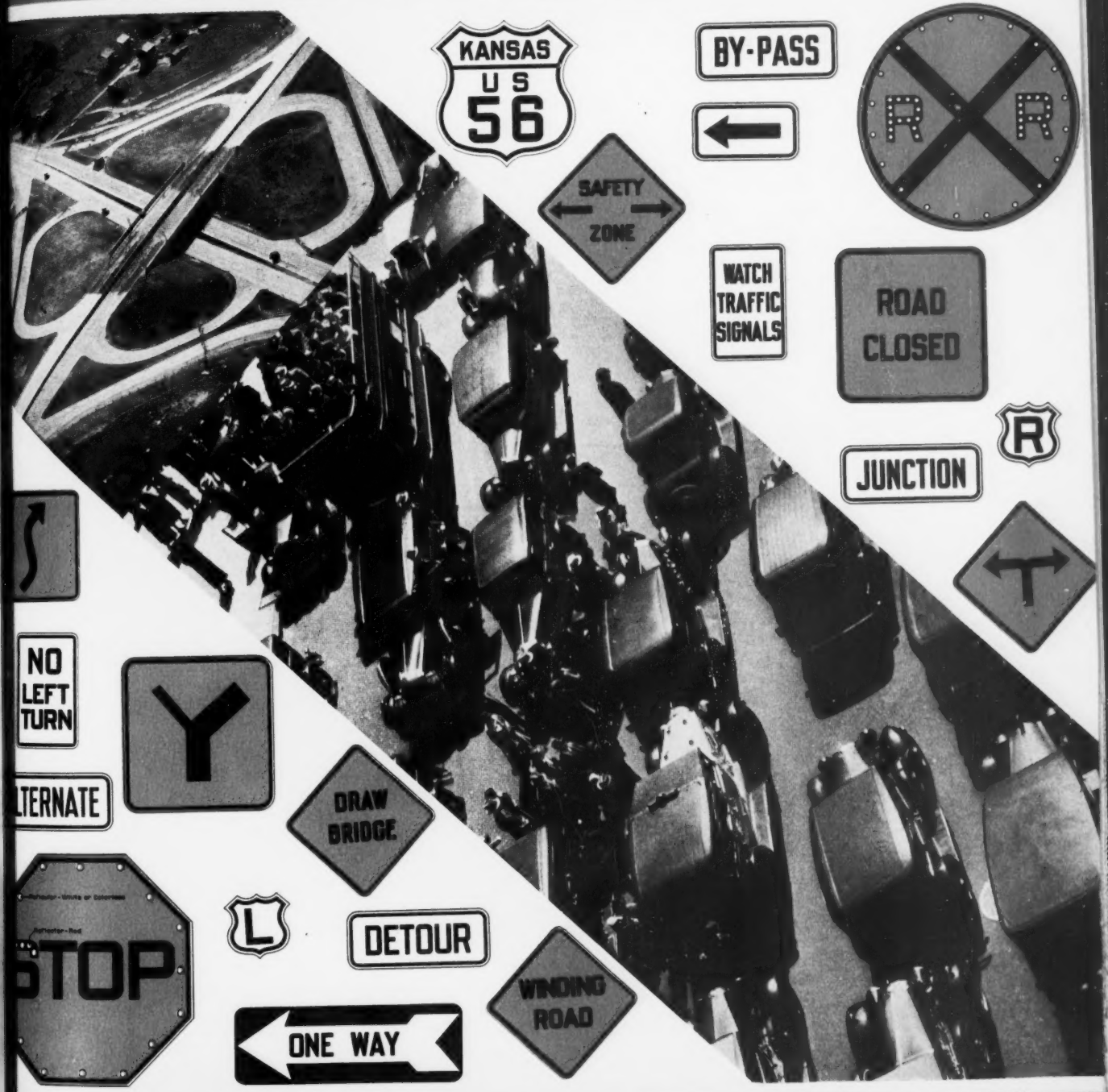
# Industrial Standardization

## *and* Commercial Standards Monthly

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***Front Cover:*** *Courtesy of Aero Service Corporation, Philadelphia.*


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ASA

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# Uniform Traffic Control Devices Approved As American Standard

## Manuals of American Association of State and Highway Officials and National Conference on Street and Highway Safety Are Now Combined

STANDARD traffic control markings and devices for streets and highways have been approved by the American Standards Association. The new document brings the manual of the American Association of State Highway Officials and the recommendations of the National Conference on Street and Highway Safety under one cover.

The consolidation of these manuals, the latter

**Modern traffic installations, such as this, require careful traffic surveys and expert engineering. Note the use of the ASA Code for Traffic Signal Colors and the newly approved recommendations for traffic control devices.**

*Courtesy Cutler-Hammer, Inc., Photo Underwood & Underwood*

of which was prepared by the American Engineering Council, marks an important step in bringing about uniform methods of control of highway and urban traffic in the United States.

### *First Step Taken in 1927*

The first definite step towards standardization of traffic control devices was taken in January, 1927, by the state highway officials. The manual was prepared primarily for use on rural highways, and covered the subject of signs only. These included stop signs and a few other regulatory signs, warning signs and guide signs. It established definite shapes and color combinations for different purposes, and included standards for marking the newly adopted system of major United States highways.

Soon after this manual was completed, the National Conference on Street and Highway Safety, in response to a growing demand for a similar set of standard markings for urban use, requested the American Engineering Council to undertake development of such a manual. This work involved an extensive study of existing practice and was approved by the Third National Conference on Street and Highway Safety in 1930. In addition to signs, this manual embraced traffic signals, markings for pavements, curbs and objects, and safety zones.

### *Symbols Have Important Role*

The new manual is in strict harmony with the Uniform Vehicle Code and Model Municipal Traffic Ordinance, including the changes adopted by the Fourth Conference on Street and Highway Safety, held in May, 1934. It also takes into account the recommendation of the Sixth International Road Congress, held in Washington in 1930, that consideration be given to the more extensive use of symbols. The joint committee, while believing that on a great majority of signs, symbols cannot safely replace word messages, saw very definite advantages in certain simple symbols. These include symbols for curves, for example, and the committee eliminated the word CURVE from such signs.

Recent extensive tests of the National Bureau of Standards in cooperation with the U. S. Bureau of Public Roads of color combinations for signs under a wide variety of conditions have confirmed the previous belief that a yellow background and black message provide the best possible color combination for high visibility. Warning and STOP signs, therefore, use this color combination, because such signs are the most important for motorists to see.

In the interest of uniformity throughout the country, the committee hopes that the newly approved American Standard recommendations as to shapes of signs, symbols and color combinations will be used by the various jurisdictions.

Traffic control devices are increasingly necessary for regulating, warning and guiding traffic. Intersections are the most critical points in traffic control, and a large percentage of the control devices in the new manual relate to intersections. Accurate determination of the degree of control needed at a given intersection is highly important, as is the proper selection of the design and operation details to effect that degree of control.

### *Use and Misuse of Control Devices*

At many intersections no artificial control whatever is desirable. Larger volumes of traffic, however, or special characteristics, such as obstructed view or heavy grades, make some form of control desirable, but the devices which will serve the purpose with the least inconvenience to traffic should be used. The normal progression is as follows:

1. Caution-type sign,
2. Slow-type sign,
3. STOP sign,
4. Traffic control signal installation,
5. Rotary traffic development,
6. Grade separation.

For the first three of the foregoing, simple standards are provided. If the situation calls for any of the last three, there is need for careful study of the details of design and operation. The two major objectives are safety to vehicles and pedestrians, and the expediting of traffic. These two considerations are sometimes antagonistic, in that an extreme degree of control might increase safety to some extent but at the same time retard traffic too much for sound economic transportation. In such cases balance must usually be attained between these two factors.

### *Adequate Use of Warning Signs*

Adequate, but not excessive, use of signs to warn of hazards, signs to indicate the applicability of traffic regulations, route markers and destination signs all have great value in facilitating the orderly flow of traffic, as do well-considered pavement and curb markings and safety islands properly designed and located. Application of sound principles in the selection, installation and operation of traffic signals is of the highest importance.

Misapplication of these traffic control devices, however, besides wasting public funds, has in numerous cases accomplished the reverse of the

purpose intended, causing delay and confusion and promoting disrespect for and disregard of all control devices. In many communities the responsible authorities have not met the problem with scientific analysis, but rather by haphazard experimentation. As a result, two fundamental errors have been prevalent, namely,

1. Placing of traffic control devices without adequate study of the possible evil effects produced either there or at other points, and

2. In the case of traffic signals, operation at times not justified by the conditions.

Traffic control requirements in any specific case cannot be determined by guesswork. They should be based on sound engineering principles established by factual studies of accidents, speeds, delays and physical conditions which will show the exact nature of the difficulty and indicate what particular device or method of control is needed.[1]

## Survey Shows Standard Methods Prevent Inadequate Specifications

"What methods are used by manufacturers, particularly machinery manufacturers, to obtain the necessary details regarding customers' orders so that the goods when shipped will meet the customers' requirements?"

A limited survey of this problem, conducted by the Policyholders Service Bureau of the Metropolitan Life Insurance Company, revealed that a number of manufacturers employ standardized methods to guard against insufficient or misleading information on orders. The survey also revealed that the problem occurs rather widely in industry.

Because of this indicated interest, the results of the brief investigation have been made generally available in a report entitled *How Equipment Manufacturers Provide Against Inadequate Specifications in Customers' Orders.*

The report points out that although the methods used by manufacturers vary and are governed to a great extent by the type of product manufactured, they may be grouped in four general classes: the direct contact method, through personal calls or correspondence; the contract method; the data sheet method; and the "text book" catalog method. The report describes how these various methods are used, quoting directly from interviews with representative manufacturers.

The third method is illustrated through the reproduction of four typical specimen data sheets that are currently used by certain of the companies contacted during the survey. Similarly, the master parts list and the octuple order form used by other companies, each designed to prevent misinterpretation and error, are reproduced.

[1]The Highway Research Board of the National Research Council and the *Safety Service* of the Metropolitan Life Insurance Company have collaborated in the preparation of a comprehensive method of procedure for traffic surveys. More recently under the Federal Civil Works Administration representatives of the American Automobile Association, National Bureau of Casualty and Surety Underwriters and National Safety Council collaborated in preparing a complete Traffic Survey Manual, covering fourteen of the numerous types of traffic studies. See also, McCracken: "Methods of Studying Traffic Control Problems," The *Municipal Index*, 1931, pages 320-338.

## Says Consumer Standards Await Customers' Demands

"If consumers insist upon merchandise standards they will be forthcoming," said Ephraim Freedman, Director, Bureau of Standards, R. H. Macy & Company, New York, at the Boston Conference on Distribution, September 23 and 24.

"The technical associations might well be brought into the picture at the present time," Mr. Freedman continued. "Some of them are already becoming more consumer-minded but there is still considerable room for improvement. Higher educational institutions have become more consumer-minded. Even primary and grammar schools can contribute materially toward the successful creation and maintenance of merchandise standards but this phase should be made the topic of another paper. The Federal government appears to be the best equipped to coordinate the efforts of the different groups. The Trade Practice Division of the National Bureau of Standards has had considerable experience and has done excellent work.

"So, I would say that the responsibility of the distributor is to carry anything for which there is a demand providing it does not deleteriously affect life or health when properly employed and also providing it has merit; to merchandise facts as readily as he merchandises his wares; to insist that information essential to the consumer evaluation of merchandise be developed at the source of manufacture and that it accompany the merchandise (preferably in detechnicalized and simplified form) all the way down to the ultimate consumer; to help bring about a meeting of minds between manufacturers and consumers; to cooperate to the fullest extent in the development of merchandise standards; above all, to help make consumers Merchandise Standard conscious."

Mr. Freedman's comments were published in a report of the Conference in the October 10 issue of *Domestic Commerce.*

## ASA Committee Recommends Symbols for Pipe Drawings

Graphical symbols to be used in drawings showing plumbing, piping, pipe fittings and valves, heating and ventilating equipment, heat-power apparatus, and conventional rivets have been agreed upon by a widely representative committee under the leadership of the American Society of Mechanical Engineers and the Society for the Promotion of Engineering Education, and have been approved by the American Standards Association.

The new standard, which also includes an Appendix listing Symbols for Electric Power and Wiring taken over from the American Standard Z10g2-1933, is the second completed by the committee on Drawings and Drafting Room Practice. The first outlined general standard arrangement of views, line work, methods of indicating dimensions, sheet sizes, and lettering.

Subcommittee 6 on Graphical Symbols on Drawings of the committee on Drawings and Drafting Room Practice prepared the newly approved standard. Professor Thomas E. French, Ohio State University, Columbus, is chairman of the subcommittee.

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## A.S.T.M. Compiles Standards Covering Rubber Products

Standards for rubber products approved by the American Society for Testing Materials have been compiled for the first time and published in one volume by the A.S.T.M. The volume, which was prepared by A.S.T.M. Committee D-11, is expected to provide a convenient laboratory standard test manual. It includes all the 21 A.S.T.M. specifications and tests for rubber products, and also a condensed bibliography.

Included in the compilation are standardized procedures for physical testing, tension testing, adhesion (friction test), hardness, abrasion resistance, chemical analysis, adhesion of rubber to metal, compression set, accelerated aging, and flexing. Rubber hose, both braided and wrapped construction, and rubber belting used for power transmission are also covered by tests given in this volume.

Specification requirements, including in most cases definite prescribed tests, are given for a number of rubber products that are extensively used, including: Cotton rubber-lined fire hose, rubber pump valves, friction tape, rubber insulating tape, rubber gloves, rubber matting, rubber insulating blankets (proposed standard), and insulating wire and cable for Class AO and Class A, 30 per cent Hevea rubber compound, and for performance rubber compound.

The bibliography lists sources of information for properties and testing of rubber. Although the list is not complete, an effort has been made to include comprehensive references to the more important of the recent publications.

Copies of A.S.T.M. Standards on Rubber Products, 204 pages, in heavy paper cover, may be obtained from the American Society for Testing Materials, 260 S. Broad Street, Philadelphia, at $1.25 each.

—•—

## Price of Sweet Corn Is Set By Grades in Pennsylvania

Sweet corn growers in Pennsylvania are getting rewards for better corn sold to the canning industry, according to the Pennsylvania Bureau of Markets. The bureau says that experimental work along this line has been done before in Pennsylvania but that the actual purchasing of corn on the basis of United States standards has never been attempted until this year.

Quality is determined by the inspector in accordance with the official grades and the grower is paid for the grade represented. This first grading of sweet corn under Federal standards by a State licensed inspector in Pennsylvania, started at a Columbia County cannery in August, marks another milestone on the road to simplified and economical shopping for the consumer, better returns to the grower.

Although these grades do not go all the way to the consumer, this is a first step in that direction. An upward spiral should be the result of consumers' increased appetites for good corn and growers' efforts to grow that good corn for the cash premiums in store.—*Consumers' Guide, Sept. 30.*

—•—

## Canadian Forgings Standard Will Eliminate Confusion

A new standard for carbon-steel forgings, just issued by the Canadian Engineering Standards Association, is expected to help clear up much of the confusion which has existed in specifications for this product in Canada.

The standard was prepared by a special committee under the direction of the Sectional Committee on Ferrous Metals. A copy may be obtained from the Canadian Engineering Standards Association, National Research Building, Ottawa, Ontario, at 25 cents.

# Millions of Dollars Saved Annually By Automotive Engineers' Standards[1]

by
**R. S. Burnett**

*Standards Manager,*
*Society of Automotive Engineers, Inc.*

## Society of Automotive Engineers Standards Work Has Been Boon to Vehicle and Parts Makers and Associated Industries

THE intrinsic dollars and cents value of standards cannot be determined because of the lack of definite records on the use of standards in most of our industrial organizations and because of the many ramifications in the application of standards in design, tooling, purchase of materials, manufacturing plant and methods, sales, operation and service of equipment, and even in salvaging. The best we have been able to do is to establish the fact on reliable opinion that the standards of the Society of Automotive Engineers have reduced the cost of automotive products by millions of dollars a year.

One or two examples in which definite values were obtainable will, however, illustrate the point. The research and standardization engineer of one of the large automotive vehicle manufacturers reported that the standardization of nuts in their plants resulted in saving approximately $500 per day in this one item. The engineer in the standardization department of another large motor vehicle manufacturer wrote us that a record was made of the number of hexagon head screws used in the various models which they built and it was a simple matter to obtain the cost of the screws used before standardization and of those used after standardization. The result of this one movement was a yearly saving of $52,758.96.

### *Costs Reduced 20 Per Cent*

Another statement obtained was to the effect that "ball bearing and electrical equipment manufacturers state S.A.E. Standards have reduced their production costs over 20 per cent."

When the idea of standards was first introduced in the very early days of the automobile industry —about 1902—the purpose was principally to have parts that were interchangeable. The first dimensional standards of which there is a definite available reference were for the spacing of rubber tire lugs, rim sections, and mounting brackets for oil lamps. In a year or two the Mechanical Branch of the Association of Licensed Automobile Manufacturers, which had just been organized and was the predecessor of the Society of Automotive Engineers, furthered the idea and really started the formulation and adoption of automobile standards.

The earliest standards adopted were the $\frac{7}{8}$ in. spark plugs and a series of screws and nuts. The first standards for steels, Babbitts, brasses, valve metal, and engine oil were also adopted during this early period and all of these were the beginning for similar and a large variety of other S.A.E. Standards that are now so universally known and used.

In those days the discussions and actions taken by the Mechanical Branch of the A.L.A.M. were confidential for its members only, but in 1910 when the Society of Automobile Engineers became custodian of the A.L.A.M. Standards, all of these activities were taken part in freely in the S.A.E. as a non-exclusive engineering body. Probably this was one of the important reasons for the great impetus to standardization in the years that followed because it gave everybody who would be concerned the opportunity to cooperate in formulating standards.

[1]Abstract of a paper presented to the Southern California Section, S.A.E., Los Angeles, November 15.

## Automotive Executives Praise S.A.E. Program

The statements of a few men high in the ranks of automotive engineering and manufacture should serve to convince even the skeptic of the value of standards. Although they apply more to specific instances, nevertheless they are illustrative of the fact.

**"These non-ferrous metal specifications, together with the accompanying information, have received wide recognition in the automotive industry and afford a most reliable guide for the selection of suitable materials for automobile parts."— *J. G. Vincent, Vice-President of Engineering, Packard Motor Car Co.***

**"The value of the S.A.E. non-ferrous metal standards is that they represent the combined efforts of both the producer and consumer. They reduce the findings of years of experimental and development work to ready reference form. One of the dangers or disadvantages of specifications is that once written they are regarded with respect. They are held as too unchanging—and not altered to meet constantly changing requirements. This danger is avoided by periodic revision by the standards group responsible as is the case in connection with S.A.E. Standards in general and these non-ferrous specifications in particular."— *Fred M. Zeder, Vice-Chairman of the Board, Chrysler Corp.***

**"While a separate standardization program is carried on as a General Motors activity, national standards are without question necessary for developing broad application and general usage. Active participation over a period of years in S.A.E. standardization work is sufficient evidence that General Motors benefits materially from an engineering and economic standpoint through such cooperation."— *W. S. Knudsen, Executive Vice-President, General Motors Corp.***

**"It is impossible to state in either few or many words, or to express in dollar terms, the very great advantages which accrue to the parts maker as well as all other representatives of the great steel-using community, from S.A.E. Iron and Steel Specifications." —*C. W. Spicer, Vice-President, Spicer Mfg. Corp.***

As time went on it became evident that the S.A.E. was the logical automotive body in which to centralize such activities, and in 1916 the American Society of Aeronautic Engineers and the Society of Tractor Engineers merged with the S.A.E., which had organized committees for standardization in these fields of engineering. The National Association of Engine and Boat Manufacturers and the National Gas Engine Association also merged their engineering and standardization in the S.A.E. and at this time the Society of Automobile Engineers became the Society of Automotive Engineers.

### *War Shows Need of Standards*

One of the interesting and notable accomplishments in the Society's work took place during this period. The World War was in full blast, the United States had started to ship airplanes to the other side, and serious trouble was soon experienced in obtaining replacement parts. Spark plugs were the most critical item because none could be gotten in Europe to fit the American engines, and interchangeability among American engines was none too good. Largely as a result of the Society's direct cooperation with the Government in aircraft building, an International Aircraft Standards Conference was called in London in which the Society was one of the participants.

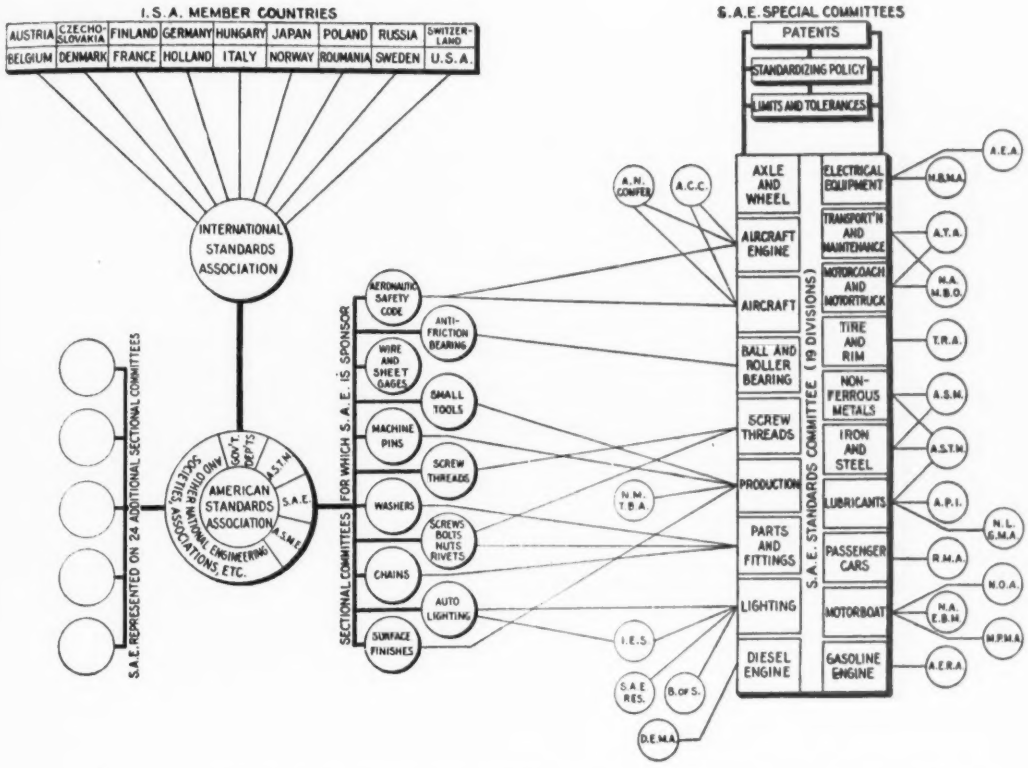
In 1917 this Conference adopted the International Spark Plug Standard that made it possible to produce plugs in Europe as well as America that fitted all engines. This solved the immediate problem of not having to ground much-needed planes, simply by standardizing one small but vital part—the spark plug. This is now the universally used standard 18 mm plug. Standards for many other parts and materials then followed, such as turnbuckles, dopes, strut wires, fittings, etc., that were vital to keeping the planes in the air.

As mass production rapidly became the fundamental basis for automobile manufacturing, the Society in 1926 fostered standards in production engineering and this new field of standardization has since become a national project in a large number of mechanical industries and the Society is cooperating in it extensively.

Progress soon led to large-scale fleet operation of motor trucks and buses and the first S.A.E. Standard relating specifically to vehicle operation was adopted in June, 1931. Reference will be made later to this class of standards.

### *S.A.E. Handbook 25 Years Old*

The first S.A.E. Handbook of Standards and Data was published and issued in June, 1911, in




THE S. A. E. STANDARDS COMMITTEE AND ITS COOPERATIVE FUNCTIONAL RELATION TO OTHER BODIES

*Courtesy Society of Automotive Engineers*

loose-leaf form that was very effective for many years during which the rapid development in the design of automobiles necessitated frequent revisions in the then current standards and the addition of new ones.

By about 1925 it was felt that a large proportion of the S.A.E. Standards had become sufficiently stabilized in use to require less frequent revision and this, together with the desire to make the Handbook a better, more convenient reference for its users, led to the first bound volume that was issued in March, 1926.

In 1933 the present larger size, containing all of the standards issued by the Society, was issued as a further improvement.

### *Fields of Standardization*

The primary field of standardization is within the company. These standards can be developed with comparative ease and rapidity because the governing conditions and requirements are usually centralized and under direct control. This is particularly so where the product is of a specialized or distinctive nature, and its manufacture, distribution, and servicing are controlled by the company. Perhaps an example of this class of standards would be for certain types of testing instruments, but even here, common standards such as screw threads, washers, and materials, if available, would be well worth using wherever possible.

The next field of standardization is what may be called intercompany or single industry standardization. This embraces to a large extent many of the standards developed by the Society and includes parts, materials, tests, procedures, and other types which are developed by and are distinctive to the automotive industries. It is in this field that the Society has been most active but within the past few years the work has been growing extensively into broader and different fields as referred to later. I think it will be conceded that the automotive industry which includes all those employing the internal combustion prime mover and the parts, materials, etc., that enter into their manufacture and use, has led the way in developing and using standards and in recog-

nizing the advantages and economies to be gained in this branch of engineering.

This leads us to the next field of standardization that is inter-industrial or national in scope. The standards in this field are naturally more varied and their broader applicability and use make them that much more important and valuable. For example, the standard S.A.E. regular series of screw thread pitches was so well suited to certain types of work that it was universally adopted not many years ago as the National Fine Pitch Series and is now used by probably all the mechanical industries. Incidentally an outstanding instance of a strictly S.A.E. Standard being used by other major industries is the case of the steel specifications. Their basic soundness and reliability, and of course the heavy tonnage used by the automotive industry, have very much simplified the making of steels, all of which has led to the common use of S.A.E. steels in the railroad, petroleum, marine, machine tool, textile machinery and other industries.

### *International Field Broadest*

The broadest field for standardization, which is the latest to develop to any extent, is the international field. This is more limited in scope than the national field because of the fundamental differences in practice and habits of thinking among different countries. Some of the major differences that have to be taken into account are the use of the inch versus the metric systems, varying national temperaments and approaches to these subjects, and usually a divergence in industrial methods and requirements. These international activities have purposely and wisely been limited to the exchange of data and of information on standardization activities in the various countries and not to formally setting up international standards as such.

In connection with these international activities it is interesting to note that many of the S.A.E. Standards have been translated into metric dimensions and adopted as national standards by countries which use metric systems exclusively. This indicates the world-wide usefulness that the Society has achieved in its standardization activities.

The early automobile standards were almost entirely dimensional to provide interchangeability of parts or to stabilize material compositions, as for instance the steels. As realization of the value of standards gradually spread in use and into other industries, the types of projects to which they were applied grew rapidly. There is no doubt but that the increasing use of standards has been an important factor in making possible the tremendous developments in industrial mechanization during the last 25 or 30 years.

Standards are now being set up and used for such a variety of purposes that it is difficult to classify them simply. It is very much like trying to work out cross-word puzzles in three dimensions.

### *Important to Fleet Owners*

By far the largest number of standards in use falls in the first group as they relate to all kinds of parts, fittings, and units that are in common automotive use. They are primarily concerned with the vehicle, parts, and materials manufacturers, but are also important to the users of these products as represented, for instance, by fleet operators, because they result in simplified routine designs, interchangeability of parts, smaller stocks of spare and replacement parts, reduced clerical operations and records, and other advantageous possibilities.

The second group also concerns principally the product manufacturers although some of them such as the engine testing forms, storage battery tests, and detonation rating for fuels are often of immeasurable value to the users of automotive products.

In the third group, the operation standards are the type that more directly concern the vehicle operators. Formulating this type of standards is usually more difficult than groups 1 and 2, because they are complicated by the influences of legislation and regulation in a large number of States, and by the widely varying conditions obtaining in different classes of operation.

The fourth group has a more general application, many of these standards being useful also in scientific and engineering research work, in certain phases of commercial activity, and in literary work.

### *Scope and Limitation of Standards*

The general policy of the Society has consistently been to refrain from attempting standardization of practices still in the development stage, and to undertake their unification and stabilization only when they have given clear evidence of becoming established in the industry. By adopting this policy originally and adhering to it, and by consistently avoiding "over-standardization", stagnation of development is avoided. On the other hand, progress in practice is followed by revision and extension of standards to keep pace with advancement in industry.

The natural result of undue limitations in general standards is stagnation, or else the disregarding of the standards so that they would be paper ones only, representing a loss in time and effort, and not a gain. As standards are definite-

ly an integral part of engineering, they must be as dynamic as the engineering, and not static.

The American Standards Association is a federation of approximately 40 national technical societies, trade associations, industrial groups and Governmental Departments, that was organized in 1918. The Society has been a member body of the ASA and has participated in many of its national standards projects since very nearly its beginning.

### *International Standards Association*

The International Standards Association was formed in 1929 by the national standardizing bodies of 18 countries as shown on the chart, and has more recently been joined by the national standardizing body of Spain. Its purpose is to make recommendations for the unification of national standards. These recommendations are not acted on for adoption as international standards but are referred to the national bodies in each member country for consideration in connection with their own national projects. The United States member is the American Standards Association.

All projects that are primarily or distinctively automotive are handled by the S.A.E. Standards Committee under the Society's own jurisdiction. Projects that are equally important to other major industries or in which the automotive industry is concerned to a lesser degree are usually carried on in a sectional committee under the procedure of the American Standards Association. The S.A.E. is a sponsor for a number of these projects and the reports of such sponsored committees are referred to the S.A.E. for approval before they can be finally adopted as American Standards. When such reports are referred to the S.A.E., they go through exactly the same procedure as S.A.E. Standards. The reports of sectional committees on which the Society is represented but is not a sponsor are given adequate consideration by the S.A.E., but formal S.A.E. approval is not necessarily required.

### *Automotive Industry Represented*

The Society, functioning in this work, sees that the automotive industry is properly represented in these national projects, and that the standards when adopted meet its requirements and needs.

Standardization, starting with comparatively simple applications to obtain interchangeability of parts in a few important items, has steadily grown in volume, scope, and application into the present broad and comprehensive system. From a function of elemental engineering, it has expanded into a factor affecting the primary supplier, the engineer, the manufacturer, the seller, the buyer, the financer, the user, and the servicer, in fact practically all who handle or use automotive products. It is a factor in labor relations, legislation and regulation and is woven into practically all the elements of modern life.

This development has taken place entirely because standardization has proved its value in reduced waste, fewer varieties, conserved effort, lower costs, improved usage, and simplified service.

Where it was originally used by technical groups, it is now an important factor in trade, business, government, commerce, science and practically all ordinary walks of life.

It is a generally accepted fact that mass production and efficient operation would be practically impossible except at greater costs if we did not have the benefit of these standardization activities.

Apparently standardization is emerging from its elementary stage into one where it will be commonly and scientifically interwoven in all of our occupational activities. It would be interesting and perhaps somewhat startling if we could see what this art of economics will be and mean a quarter of a century from now. Will its progress and effectiveness increase in the next 25 years as much as it has during those just passed? We think it will.

## French Navy Yard Adopts Standard Macrograph Tests

Because of recent disasters involving several French submarines, which have been traced to the fact that ordinary bending tests did not reveal the excessive fragility of certain plates used in their construction, standard macrographic tests are being prepared for testing all metals used in French naval yards. In the future, macrographic tests may also be used in conjunction with X-rays or gamma rays tests.

The purpose of the macroscopic test is to find out the structure particularities and the local irregularities occurring in metals. The examination is carried out either by the naked eye or with the aid of a low-power magnifying glass. It relates either to the surfaces of the pieces or samples or to the fractures of the test pieces; and the manner in which the test piece has been selected, as well as the process employed to obtain the rupture, must be clearly stated on each sample.

The French railway companies, it is reported, adopted the conditions relating to macrographic tests in 1928 for the acceptance of rails. A reference photograph album is used showing the limit of permissible defects.

## U. S. Metal Mines Show Use of Safety Devices

Overwhelming approval of safety devices for use of workers in metal mines was shown in the replies received to a questionnaire sent out by the E. D. Bullard Company, according to a report published in the *Mining Congress Journal*.

Copper, silver, gold, lead, iron, zinc, and nickel mines located in all parts of the United States were questioned as to their use and experience with safety equipment.

Replies were received from 49 mines.

The largest number of replies received to each question is shown below:

| | *Yes* | *No* |
|---|---|---|
| Do your men carry individual first aid packets? | | 36 |
| First aid supplies underground? | 39 | |
| Safety hats? | 36 | |
| Are safety hats of value? | 39 | |
| Many toe injuries? | | 26 |
| Are safety shoes practical? | 19 | |
| Do you maintain a rescue station? | 32 | |
| Is your rescue station of value? | 24 | |
| Do you have resuscitation equipment on the property? | 26 | |
| Has it proved of value? | 19 | |
| Are your men trained in first aid? | 33 | |
| Goggles for workers underground? | 33 | |
| Has use of goggles decreased accidents? | 28 | |
| Have you a safety organization? | 44 | |
| Is it of real value? | 43 | |

To the question, "How many accidents were prevented by use of safety hats?" the replies varied from a record of two and three prevented, to 25 per year, and 99 per cent of all such accidents.

Dust hazard in metal mines is a relatively new problem and for this reason is not treated statistically in this report. It is becoming well recognized that continued breathing of dust gives rise to occupational disease. Prominent among such dusts is silica dust, giving rise to silicosis.

Effective methods of prevention include segregation of dust products operations, dust control, ventilation, protective devices, and proper medical supervision. Under protective devices, respirators are becoming more and more accepted as one means of overcoming the dust hazard.

## Wide Interest in Sheet Specifications Is Cited

Progress in developing specifications for sheets was reported by Ruth O'Brien, chairman of the American Home Economics Association's Committee on Standardization of Consumers' Goods at the A.H.E.A. annual meeting in September.

Following the suggestion of the committee, Miss O'Brien said, a number of states took up the project on sheet specifications initiated by Miss Cook, in Ohio. In this project, groups of consumers cooperated with their local merchants in getting the bed sheets sold at white goods sales labeled with their construction specifications. This was in accord with the recommendation of the committee set up at the request of the A.H.E.A. under American Standards Association procedure a few years ago to study informative labeling of sheets.

As a result of the nation-wide attention which this work attracted, one company put on the market a so-called "specification sheet." The success of this merchandising venture was so great that some other sheeting companies are falling into line.

"This development is especially important," Miss O'Brien said, "because it shows that cooperative consumer effort can attract the attention of distributors and can bring about improvement in merchandising practices."

## *Bertrand H. Johnson*

Bertrand H. Johnson, Assistant to the President, R. D. Wood Company, died August 27 while attending a convention of the American Foundrymen's Association in Toronto.

Mr. Johnson, who was a vice-president of the American Foundrymen's Association and one of the organizers of the Gray Iron Founders Association, was active in standards work. He represented the American Society of Mechanical Engineers and the Manufacturers Standardization Society of the Valve and Fittings Industry on several committees working under the procedure of the American Standards Association.

### U. S. Drug Administration Sets Preserve Standard

A new ruling by the Food and Drug Administration requires that jams and preserves made with less than 45, but more than 25 pounds of fruits to each 55 pounds of sugar, be labeled "Imitation." In addition, labels must show just how the product is an imitation. Added fruit acid and artificial color must be stated. Federal procedure is lining up with trade practices adopted and familiarized under NRA codes. Jam and preserve manufacturers, complying with the code of fair competition for the preserve industry under the NRA labeled such mixtures as "imitation." Consumers and members of the preserve industry have come to regard these products as actual imitations.—*Consumers' Guide, Oct. 14, published by the Agricultural Adjustment Administration.*

# Accident Statistics Standard Will Pave Way for Prevention

Difficulties have been encountered, and are now being overcome, in preparing an American Standard on Accident Statistics, according to J. W. Myers, Standard Oil Company of New Jersey, who spoke on accident statistics before the Petroleum Section of the National Safety Congress, at Louisville, October 15.

The importance of standard methods of compiling statistics in the formulation of methods for preventing accidents was emphasized by Mr. Myers during his address.

The standard to which Mr. Myers refers is now being completed by a committee working under the procedure of the American Standards Association. Leaders in the work of the committee are the International Association of Industrial Accident Boards and Commissions; the National Council on Compensation Insurance; and the National Safety Council. Mr. Myers is a representative of the American Petroleum Institute on the sectional committee.

He said:

"There has been at work for some time a national committee which is reviewing the entire subject of accident statistics. The early meeting of the committee revealed a wide divergence of opinion as to what statistical definition should be used for the purpose of recording accidents. Among the definitions discussed have been the following:

1. The old definition of a lost-time accident.
2. The present definition of the National Safety Council.
3. A definition which requires the counting of all injuries where the employee does not return to his regular duties.
4. A definition requiring the tabulation of all accidents which require medical treatment.

### *Experts Differ*

"'Those interested from a social standpoint in ascertaining the true facts regarding accidents, such as government officials, assert that we should strive for the ideal of recording all accidents which cause injuries. Safety men, on the other hand, dislike to see the definition enlarged in such a manner as to cause an apparent increase in their accident rates. They also contend that from a practical standpoint it would be most inadvisable to greatly enlarge the definition because the increased number of recorded accidents would have a discouraging effect on management, the foremen, and the rank and file of employees, particularly if it made it impossible to achieve any substantial so-called accident-free periods of operation.

"An effort is being made to obtain a favorable decision, on the part of all the organizations concerned, on a compromise where the employee, at the beginning of the next calendar day following the day of injury, is unable 'to perform his ordinary duties or some other duties in a regularly established job; that is, one not set up only to prevent the case from being counted as a disabling injury.'

"As a matter of fact, there is considerable sentiment in favor of adopting a definition which requires the counting of all accidents where the injury prevents the employee from returning to his regular duties on the calendar day following the date of injury.

"The committee has reached one other conclusion, and that is, that in determining days of disability certified calendar days of disability shall be used. This is in line with the position which our industry has taken for many years."

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## Federal Trade Commission Permits Fertilizer Grades

The Federal Trade Commission announced on November 8 its policy in regard to grades of fertilizer. A list of grades suitable to meet the agricultural needs of each State in the District, or of the entire District, may from time to time be established by the producers in the District or State, the Commission says. The committee through which the producers act in setting up such grades, should cooperate, whenever possible, with agronomists and other Federal and State agricultural officials, according to the Commission's ruling.

After such grades have been established, the sale of mixed fertilizer not conforming to the grades established is prohibited in the States affected as an unfair trade practice. Special formulas or special ingredients in standard formulas may however be made to fill bona fide orders received from consumers who order on their own specifications if an adequate charge is made to cover the special formula or ingredients and the special mixing required.

## Railway Engineering Association Publishes Revision To Standards

The revisions of the *Manual* of the American Railway Engineering Association which were approved at the Annual Meeting of the Association in March, 1935, have now been published. The August and September issues of the *A.R.E.A. Bulletin* give these changes complete. Recommendations from the following committees appear in the August issue:

Roadway
Rail
Track
Buildings
Wooden Bridges and Trestles
Masonry
Highways
Rules and Organization
Water Service, Fire Protection, and Sanitation
Yards and Terminals

The September issue contains recommended changes from the committees on:

Iron and Steel Structures
Wood Preservation
Uniform General Contract Forms
Economics of Railway Labor
Shops and Locomotive Terminals
Waterways and Harbors

Actions of the A.R.E.A. affecting the *Manual*, which are published in the September and October issues of the *A.R.E.A. Bulletin*, were discussed in the April issue of INDUSTRIAL STANDARDIZATION, pages 108 and 109.

## W. L. Batt Elected A.S.M.E. President

W. L. Batt, president of the SKF Industries, Inc., was elected president of the American Society of Mechanical Engineers, and took office during the Annual Meeting of the Society held in New York during the week of December 2.

Mr. Batt, a graduate of Purdue University, is also a director of the Air Preheater Corporation, and a director of the Hudson Insurance Company, New York. He is particularly well known for his activities on United Engineering Trustees, Inc., being at present chairman of the coordination committee of engineering societies.

For his interest and activity in promoting commercial relations with Sweden, King Gustav V, in 1926, conferred upon Mr. Batt the Order of Vasa, and in 1933 the Royal Order of the North Star.

Newly elected vice-presidents of the American Society of Mechanical Engineers are Alex D. Bailey, assistant chief operating engineer of the Commonwealth Edison Company, Chicago; J. A. Hunter, professor of mechanical engineering at the University of Colorado, Boulder; W. A. Shoudy, associate professor of mechanical engineering at Columbia University and a practicing consulting engineer; and R. L. Sackett, dean of the school of engineering at Pennsylvania State College, State College.

Managers of the American Society of Mechanical Engineers, elected and taking office at the Annual Meeting, are W. L. Dudley, vice-president and chief engineer, Western Blower Company, Seattle, Wash.; W. C. Lindemann, works manager and secretary, A. J. Lindemann and Hoverson Company, Milwaukee; and J. W. Parker, vice-president and chief engineer, the Detroit Edison Company.

The American Society of Mechanical Engineers is a Member-Body, and was one of the original groups which organized the American Engineering Standards Committee (now the American Standards Association).

## British Undertake to Establish Standards for Plating Finishes

Although faced with the difficult fact that metal finishes ("Florentine," "antique bronze," etc.) cannot be satisfactorily described in words or reproduced by color-photography, the Electro-depositors' Technical Society, London, England, is starting work to develop standards of color and quality of plated (or electro-plated) metals.

Furniture fittings, door and window fittings, shop window display stands and many household articles are among those which would be affected by standards.

Difficulty has been experienced in the past because standard finishes that would match could not be obtained from different firms. The use of different formulae and the absence of recognized descriptions for specific shades or tones of finish has meant that articles submitted to different firms with identical instructions would come back with different finishes which would not match.

### Germans Describe Their Oil Pour-Point Tests

The German standard method for the determination of the pour-point of lubricants is described in "Fettchem. Umschau," 1935, 158, and is the specification D.V.M. 3662.

The pour-point is the temperature at which the oil becomes so stiff that it ceases to flow under the effect of gravity. The measurement is given in degrees C. The test is done on lubricants for low-temperature machines where gravity feed is used.

# Hair Dryer, New Gas Appliance, To Be Tested by A.G.A. Standards

Speeding the initial formulation of requirements for the testing and approval of the newest variety of commercial gas appliances—the gas hair dryer—the American Gas Association, through its Subcommittee on Approval Requirements for Gas Hair Dryers, on October 14 completed the first draft of proposed specifications for this recently developed type of equipment.

The importance of this action of the American Gas Association towards developing hair-dryer standards is emphasized by the fact that, as a result of demands from the industry during the past year, a number of gas hair dryers have already been tested by the Association's Laboratories in accordance with the American Standard Approval Requirements for Gas Space Heaters and Unit Heaters, and temporary approval has been given to some half dozen such units on this basis. Hair drying by gas seems to be earning increasing favor throughout the country, and sizable new extensions of the commercial gas load appear to be in the offing as a result thereof. This new application of gas permits, it has been shown, a considerable saving in energy costs to operators of beauty and barber shops.

Meeting at the Palmer House, Chicago, in connection with the Seventeenth Annual Convention of the American Gas Association, the gas hair dryer subcommittee prepared the most complete initial set of suggested requirements yet developed for a new type of complete gas-burning appliance. This it was able to do because of the more than ten years of experience on the part of American Gas Association committees in developing standards for 27 other varieties of gas appliances and their accessories, and because of the results of nearly a year's thorough research on marketed gas hair-drying units by the expert technicians of the A.G.A. Testing Laboratories in Cleveland and Los Angeles. The requirements are being sent to the entire gas industry for criticism and comment.

### *Proposed Requirements*

As they now stand, the tentative gas hair-dryer specifications require automatic gas control associated with the blower or fan in addition to individual burner valves and a manual main control valve. They also limit outlet air temperatures to 160 degrees Fahrenheit and require the use of gas pressure regulators, thermostats, and safety pilots. No stone is left unturned from the standpoint of safety. Other clauses included are essential from the standpoints of service and design. High efficiency of performance is demanded; ample hot air supplies and even distribution of heated air to different helmets are specified; and both flue outlet temperatures and appliance surface temperatures after long operation are limited.

N. J. Reiff, Appliance Laboratory, United Gas Improvement Company, is chairman of the subcommittee. Nine other authorities in the field are members.

### *Ask Comments on Proposal*

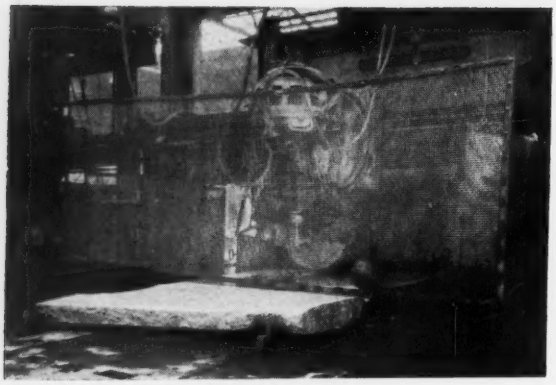
Already the proposed standards have been printed in tentative form and distributed for comment to some 1,000 member companies of the American Gas Association, as well as to numerous interested national groups and bodies outside of the Association. When replies have been received, the subcommittee will review its requirements in the light of comments submitted and, if no further research or investigation is necessary, it will submit the revised standards to the American Gas Association Approval Requirements Committee (American Standards Association Sectional Committee, Project Z21) for final endorsement at the Spring, 1936, meeting. If approved, the requirements will be offered to the American Standards Association for approval as American Standard and will become effective on and after January 1, 1937.

## "Fresh" Eggs Must Meet Standards In Massachusetts and California

A "Fresh Egg Bill," making it illegal to designate any eggs as "fresh" unless they come up to a certain standard of quality, went into effect in Massachusetts on September 20.

Hereafter egg consumers in that State may expect eggs labelled "fresh" to have clean, sound shells; firm, clear whites; yolks not plainly visible; air cells not more than $\frac{1}{4}$-inch in depth; and no visible germ development.

Egg standards also became law in California on September 15. Eggs will be graded as Specials, Extras, Standards, and Trades, and will have four weight specifications—Large, averaging $23\frac{1}{2}$ ounces to the dozen; Small, averaging 16 ounces to the dozen; and Peewee, including eggs weighing less than $1\frac{1}{4}$ ounces each. Eggs which are not "Large" in size and "Extras" in quality must be definitely labeled or placarded as to the quality and size with which they actually comply.



*Photographs Courtesy Norton Company*

**Type of Guard Approved in the Revised Code. Use of This Guard Makes It Possible to Cut Stone at High Speed.**

# Abrasive Wheel Code Faster Cutting With

## Revised Code Permits Higher Speeds for Cutting Stone, Using Approved Guard Equipment

## Abrasive Wheel Code, Revised Five Times Since 1916, Keeps Pace With Industry's Progress

by

**A. Rousseau**[1]

*Secretary, Sectional Committee on Safety Code for the Use, Care, and Protection of Abrasive Wheels*

A REVISED Abrasive Wheel Safety Code permitting faster speeds for stone cutting under certain conditions was approved recently by the American Standards Association, and copies of the revised edition are now available.

The revisions permit the use of cutting, or so-called "coping," wheels, such as are used in the stone industry, at speeds up to 14,000 and 16,000 surface feet per minute under certain conditions. The limiting speed for this class of wheel in the former (1930) Code was 9,000 surface feet per minute (sfpm) and during recent years this limitation has proved to be a handicap to the distribution and use of improved wheels and machines.

Higher speeds were being used in a number of places and investigation showed that although wheel breakages occurred occasionally, no one was injured. It was found that the users had themselves worked out simple yet effective methods of protecting the operators.

These methods were studied and actual breakage tests to demonstrate their adequacy were conducted. Specifications covering their use, where necessary, were then prepared in code form, and, after careful deliberation by all interests concerned, were written into the new revision.

Some question then arose as to the necessity for auxiliary guarding in connection with steel-centered coping wheels, and another test was conducted to answer this point. This test demonstrated quite conclusively that "steel-centered" coping wheels do not require the same kind of guarding as do the so-called "solid" type.

Briefly summarized, the new rules permit the operation of both steel-centered and solid cutting or coping wheels up to 16 in. diameter at 16,000 sfpm, and larger than 16 in. at 14,000 sfpm. Where the cutting wheels are of the "solid" type an auxiliary enclosure surrounding the working parts of the machine is required in addition to the conventional hood. Steel-centered coping wheels may be used with only the conventional hood as protection. These features, though relatively simple, necessitated quite a number of changes and additions both in definition, rules, and tables.

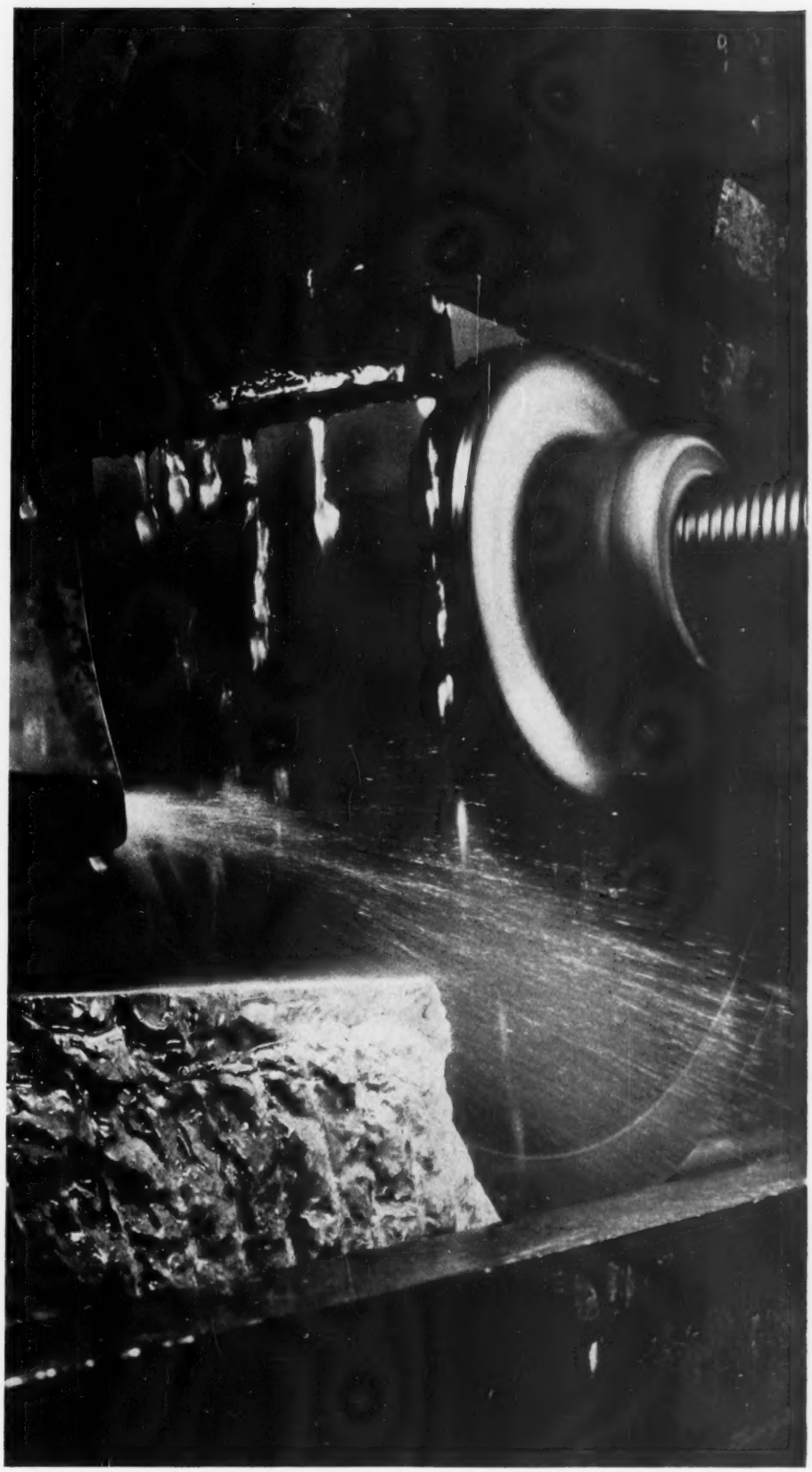
The Abrasive Wheel Safety Code has had a long and interesting history, the beginning of which antedates the ASA safety code program and even the ASA itself.

### *Standards Needed 20 Years Ago*

The original edition was printed in November, 1916, by the Grinding Wheel Manufacturers Association, then known as the "Abrasive Wheel Manufacturers." The introduction is copied here

[1]Chairman, Grinding Wheel Manufacturers Association Abrasive Division; Sales Engineering Department, Norton Company, Worcester, Mass.

# de Permits th Safety



in its entirety—because it indicates quite clearly the need for standardization of safety regulations which existed twenty years ago:

"Recognizing the lack of appreciation among many users of abrasive wheels, insurance engineers, officials of State Labor Departments and State Factory Inspectors, of the important factors bearing on safety in connection with abrasive wheels, and recognizing that this lack of appreciation is responsible for many easily preventable accidents, the Abrasive Wheel Manufacturers appointed a committee to draft a code for safe practices in relation to abrasive wheels. This code is to be used as the foundation of a campaign for uniform state laws and uniform insurance rules in an endeavor to overcome present and prevent future unsafe practices, and also to eliminate much of the confusion existing at present, brought about from the

## Abrasive Wheel Committee Is Widely Representative

**Among the members of the Sectional Committee for the Use, Care, and Protection of Abrasive Wheels are included grinding wheel manufacturers, governmental agencies, insurance interests, machine tool builders, foundrymen, and various technical men and users of machine tools and abrasive wheels who are interested in their most efficient and effective use. Guiding and taking the leadership in the committee's work are the Grinding Wheel Manufacturers Association and the International Association of Industrial Accident Boards and Commission, which act as sponsors for the committee, under American Standards Association procedure.**

**The members of the committee are:**

***A. Rousseau*, Grinding Wheel Manufacturers Association, *Secretary*.**

Grinding Wheel Manufacturers Association, *L. L. Byers, George W. Chormann, F. R. Henry, John R. Kempf, A. Rousseau, H. G. Weinland*
International Association of Industrial Accident Boards and Commissions, *John Campbell, H. G. Ehret, R. McA. Keown, John P. Meade, John Roach*
American Foundrymen's Association, *F. H. Elam*
American Society of Mechanical Engineers, *W. B. Gardiner*
American Society of Safety Engineers, Engineering Section, National Safety Council, *G. E. Sanford*
American Steel and Wire Company, *H. J. Weeks*
International Association of Machinists, *H. W. Brown*
International Harvester Company, *V. B. Hunter*
Metal Polishers, Buffers and Platers of North America, *G. J. Speidel*
National Association of Mutual Casualty Companies, *S. E. Whiting*
National Bureau of Casualty and Surety Underwriters, *J. J. Sheridan, J. P. Joice (alt.)*
National Founders Association, *G. E. Sanford*
National Machine Tool Builders Association, *H. W. Dunbar*
National Metal Trades Association, *Frank P. Brown*
National Safety Council, *W. Dean Keefer*
Otis Elevator Company, *F. M. Ward*
Society of Automotive Engineers, *A. J. Gifford*
U. S. Department of Commerce, National Bureau of Standards, *H. L. Whittemore*
U. S. Department of Labor, *Swen Kjaer*
U. S. Treasury Department, Bureau of the Public Health Service, *Prof. E. A. Winslow*

lack of uniformity in State and insurance requirements. This lack of uniformity has resulted in a condition which seriously affects every user of abrasive wheels, every manufacturer of abrasive wheels, and every manufacturer of grinding machinery.

"The report of a Special Committee appointed by the National Machine Tool Builders' Association to consider safety in connection with abrasive wheels and grinding machines, and a tentative report of a Special Committee appointed by the State of Pennsylvania to draft laws pertaining to grinding and polishing were used as a basis of consideration for the code which follows."

The rules contained in this edition were naturally rather sketchy in some respects. Detailed specifications for the construction of hoods are conspicuously absent, and although the important dimensions for flanges are indicated, they are not easy to visualize, because there are no accompanying sketches. The recommended speeds and the maximum permissible speeds are very low when compared with the standards of today. It is interesting to note, however, that many of the basic rules have not been changed and the wording of some is identical with that in the present edition.

### *Widely Distributed*

Apparently the Code met a definite need and was widely distributed because a second edition was issued in 1917 and a third in 1919.

The second edition contained specifications for cast hoods and the basic dimensions for fabricated hoods.

The third edition included more detailed specifications for fabricated hoods, and sketches to illustrate the tables of dimensions for flanges. These editions like the first had the approval of the National Machine Tool Builders' Association as well as the Abrasive Wheel Manufacturers.

"On April 3, 1920, the American Engineering Standards Committee (now the American Standards Association) invited the International Association of Industrial Accident Boards and Commissions and the Grinding Wheel Manufacturers Association of the U. S. and Canada to act as joint sponsors for a Safety Code for the Use, Care, and Protection of Abrasive Wheels. These associations both accepted this sponsorship and according to the Rules of Procedure of the AESC they jointly appointed a Sectional Committee to draft such a Code."

The above paragraph is quoted from the introduction to the 1922 edition which was issued as a "Tentative American Standard." Needless to say, the 1919 edition of the Abrasive Wheel Manufacturers code was used as a basis for the deliberations and work of the new sectional committee.

***This Technical Subcommittee Studied Cutting Tests at the H. E. Fletcher Company Plant in Chelmsford, Mass., to Determine Whether Safety Was Possible at High Speeds While Cutting Stone.***

**Reading Left to Right the Members of the Committee are: George Chorman, Carburundum Company; J. L. Keane, Aetna Life Insurance Company, Hartford, Conn.; C. R. Sinclair, Hartford Accident & Indemnity Company, Boston; Mr. Sharpe, Jr., of Boston; Mr. Graham, H. E. Fletcher Company, Chelmsford, Mass.; H. K. Parker, Maryland Casualty Company, Boston, Mass.; George Nelson, Norton Company, Worcester, Mass.; A. Rousseau, Norton Company, Worcester, Mass.; Wesley M. Graff, National Bureau of Casualty & Surety Underwriters, New York; C. E. Sharpe, Globe Indemnity Company, Boston; O. D. Bayrer, Travelers Insurance Company, Hartford, Conn.**

Considerable new material was introduced and the older material was revamped or rearranged and as a result the 1922 edition was quite adequate to meet the needs of the time.

No further changes were made until 1926, at which time the revised edition became a "full-fledged" American Standard.

A further revision to keep pace with the trend of the times and the progress of industry was made in 1930 and this has been considered the standard of good practice ever since. Approximately 30,000 copies of this edition have been distributed.

As a matter of fact the 1935 revisions, although important, are relatively insignificant when one considers the limited field to which they apply. The number of people engaged in the cutting of stone and marble is, of course, relatively small when compared with the vast number of users of abrasive wheels in all other industries.

As no changes have been made in other sections of the Code, the provisions of the 1930 edition are still in force as far as the vast majority of grinding wheel users are concerned.

### *Kept Up-to-Date*

This is not stated boastfully, because it has always been the aim of the sponsors and of the sectional committee to keep the Code up-to-date so that it would not act as a hindrance to progress. In each of the editions, particularly since 1922, most of the important changes made have been in some way concerned with the sanctioning of higher operating speeds, with, of course, due regard to the related problems of stronger guards, and proper classification of types of wheels and grinding operations. Whenever specifications for new or stronger types of guards were needed, actual breakage tests were conducted in order to obtain the needed data. Thus, while it is true that certain classes of wheels are today being used at speeds much higher than would have been permitted in 1916 or even more recent years, we believe it can be truthfully said that this increase in

## Abrasive Wheel Code Most Widely Used

**The Safety Code for the Use, Care, and Protection of Abrasive Wheels is the most widely used of all safety codes approved by the American Standards Association.**

**Fifteen states have adopted the Code verbatim or have used it in writing their own regulations.**

**Five other states have written their codes for the use of abrasive wheels independently, but three of these states will use the approved American Standard when they revise their regulations, officials said recently.**

speed has not increased the accident frequency or severity. Improved wheels and equipment have, of course, made the higher speeds possible, but had not the Code kept pace with the times, the use of the higher speeds would have been illegal in many places, and in addition the lack of authentic information on requisite guarding to meet the new conditions would undoubtedly have resulted in many accidents.

The changes and additions involved in the present revision constitute a typical example of the methods which have been pursued in making previous important revisions.

It may be of interest to note that a majority of the present membership of the sectional committee have been actively and continuously associated with the work of the committee since its organization in 1916. Of the 28 members originally appointed, sixteen are still on the present list, the others having been replaced from time to time for reasons such as change of business connections, retirement from active business, and death. All the members of the committee have displayed keen interest and have cooperated whole-heartedly in any work involved in the several revisions which have been made.

## Automotive Meter Calibrations To Be Standardized by S.A.E.

In response to requests from several sources, the Society of Automotive Engineers has undertaken a program leading to the standardization of speedometer and odometer calibrations (a new subject) and drive-shaft standardization (possible revision of the S.A.E. Standard for tachometer drive-shaft connections, page 26, 1935 edition *S.A.E. Handbook*).

The project has been referred by the S.A.E. Standards Committee to a Speedometer Subdivision of the Parts and Fittings Division, of which F. G. Whittington, Moto Meter Gauge & Equipment Corp., is chairman.

At an informal meeting to consider the scope of the project, agreement was reached upon eight principles to form the basis for standardization.

With respect to drive-shaft standardization it was pointed out that it does not seem feasible at the present time to establish a single universal standard. One suggestion made was the possibility of continuing the present S.A.E. aeronautic type of drive-shaft connections, for light duty and to substitute square shaft tips for heavy-duty, marine, and similar applications.

Other members of the Subdivision in addition to Mr. Whittington are: W. H. Hutchins, Delco-Appliance Corp.; P. J. Kent, Chrysler Corp.; A. W. LeFevre, Stewart-Warner Corp.; C. W. McKinley, AC Spark Plug Co.; F. G. Gardner, Breeze Corps., Inc.; and E. T. Blanchard, Barbour-Stockwell Co.

## National Foundry Company Is New ASA Company Member

The National Foundry Company of New York, Inc., Brooklyn, manufacturers of cast-iron soil pipe and fittings, black and galvanized drainage fittings, and black and galvanized steam fittings, has joined the American Standards Association as a Company Member.

Services of the American Standards Association available to the Company as a member of the ASA include free subscriptions to INDUSTRIAL STANDARDIZATION, certain free copies of standards, and 20 per cent discount on all other standards.

### French Railroad Specifications Now Published in Revised Form

Standard specifications used by the French railways in purchasing supplies were revised, and published recently.

All the materials, metallic and non-metallic, generally employed in the construction of locomotives, rolling stock and other railway equipment, mechanical parts and fittings, motor oils, lubricants, brakes, electrical accessories, and so forth, as well as a special publication of 69 pages on bolts, nuts, screws, and rivets are included in the new standards.

The specifications are printed separately in 218 leaflets and booklets, as well as in loose-leaf book.

# Sectional Committee Reports Progress In Research on Cast-Iron Pipe, Castings

Since the Sectional Committee on Cast-Iron Pipe and Special Castings (A21) started its work under the procedure of the American Standards Association in 1926, a large amount of research work has been carried out to supply the committee with data as a basis for the American Standards to be prepared by this committee. It was intended that these standards would constitute revisions of the existing standards of the American Water Works Association, the American Society for Testing Materials, and the New England Water Works Association for water pipe and of the American Gas Association for gas pipe. They will cover centrifugally cast pipe as well as pit cast and horizontally cast.

In many respects the research work of this committee has been of a fundamental nature and has supplied new data as a basis for the new standards. Many bursting tests have been made on fittings to serve as a check on designs, and tests on straight pipes have enabled the pipe to be designed taking account of the stresses produced by external loads as well as the water pressure within the pipe. Several engineering colleges have lent their valuable cooperation in this research work, and the results will be laid down in a series of six bulletins, two of which have already appeared as described below.

*Investigation of Bell and Spigot Joints in Cast-Iron Water Pipes.* (Bulletin No. 87, the Engineering Experiment Station, Ohio State University, January, 1935, Prof. John C. Prior). The tests described in this bulletin were sponsored by the Cast Iron Pipe Research Association, the City of Columbus and the Sectional Committee on Cast Iron Pipe. This bulletin consists of three parts, respectively dealing with Pull-Out Strength of Bell and Spigot Joints with Special Reference to Bell Strength; and an Investigation of the Strength of the Harness for Retaining a 36-inch Bell and Spigot Joint in Cast-Iron Water Pipes. Two Appendices give the proceedings of Subcommittee 1-B, of which Prof. John C. Prior is chairman, pertaining to matters discussed in this Bulletin, and harness designs by Messrs. Thomas H. Wiggin, William R. Conard, and J. W. Moore, respectively.

Copies may be ordered (price 50 cents) through the office of the American Standards Association or directly from Ohio State University, Columbus, Ohio.

*Tests of Friction Loss Through Fittings—Long vs. Short Body Fittings for Water Supply.* (Bulletin No. 20, Engineering Experiment Station, Cornell University, September, 1935).—Part I of this report deals with Loss of Head Caused by Bends, Tees and Crosses, giving the results of numerous experiments on AWWA Standard and Proposed Short Body Types made at Cornell University, 1929-1930, by Professors Ernest W. Schoder and Arthur N. Vanderlip. Part II gives an Economic Comparison, Considering Operating Cost, as Affected by Friction, and Installation Cost, by Messrs. Allan T. Ricketts and Thomas H. Wiggin.

Copies (price $1.25) may be ordered through the ASA office, or directly from the Director, Engineering Experiment Station, Cornell University, Ithaca, N. Y.

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## London Conference Changes Methods of Oil Analysis

Minor changes in the methods of analysis of oils and fats for water and volatile matter, acidity, saponification value, iodine value, density, and refractive index were made by the International Commission for the Examination of Fats at its sixth meeting in London, October 1-5.

Representatives from Austria, Czecho-Slovakia, France, Germany, Great Britain, Greece, Holland, Italy, Russia, Spain, Sweden, and Switzerland are members of the International Commission, the object of which is to prepare standard analytical methods for the analysis of oils, fats, and soap.

Proposed tentative methods for the analysis of soap which were suggested by the central bureau of the Commission were postponed for action until the next meeting of the Commission, and the British methods for analysis of soaps will be studied before definite action is taken.

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### Illinois Malleable Iron Company Joins ASA as Company Member

The Illinois Malleable Iron Company, Chicago, has just become a Company-Member of the American Standards Association. The company manufactures fittings, valves, heating material, castings, malleable, grey iron, brass and aluminum.

# A.S.T.M. Committees Start Work on New Standards

New work is being initiated by some of the committees of the American Society for Testing Materials, the recent announcement of current activities of A.S.T.M. committees issued by the Society indicates.

Work on these new proposals for standards resulted from activities in allied directions within the committees or has been brought about as a result of insistent demands from industrial groups for methods of test or specifications for materials hitherto not covered in the program of the American Society for Testing Materials.

### *Cementitious Materials*

Committee C-7 on Lime is working on specifications for lime for chemical and industrial purposes that will give recognition to several suitable grades of lime, and is investigating the necessity of a test method for determining the resistance of plaster to abrasive wheels.

The program of Committee C-1 on Cement includes the preparation of new methods of procedure for the determination of iron, manganese, and phosphoric acid in portland cement.

Committee C-10 on hollow masonry building units is preparing detailed specifications for fireproofing tile. It is giving attention to a newly proposed method for classifying clay building brick in accordance with their weathering properties to determine the suitability of this method to structural clay tile.

### *Ferrous Metals*

The A.S.T.M. Steel Committee is developing requirements for fabricated re-enforcement material, wire mesh, wire mats, and similar materials and has decided to standardize requirements for steel still tubes and heat-exchanger and condenser tubes manufactured from four to six per cent chromium steel. This committee has also recently circulated a draft of requirements for materials suitable for use as nuts on bolts for high-temperature or high-pressure service.

A new specification for light gray-iron castings has been nearly completed by Committee A-3 on Cast Iron. This committee is also studying current specifications in order to harmonize the values given in these specifications for test results.

Committee A-6 on Magnetic Properties is investigating the probable limits of accuracy of various test methods applied to high coercive force steels at maximum magnetizing forces.

### *Non-Ferrous Metals*

The development of new standards in non-ferrous metals has been undertaken by several A.S.T.M. Committees.

Committee B-5 on Copper and Copper Alloys, Cast and Wrought, is planning to prepare specifications for wrought phosphor bronzes, wrought low brass, and commercial bronze strip. Specifications are being developed for some of the newer condenser tube alloys, and the possible consolidation of all condenser tube requirements into one standard is under consideration. A program involving revisions of casting specifications under this committee's jurisdiction both to maintain proper relations with the ingot metal specifications and also to bring them up to date is under way.

Due to the improved quality of electrical heater wire a study is being made by Committee B-4 to determine whether the temperature of the test can be increased from 1,950 F to 2,000 F in order to shorten the time required to make a life test in this material.

### *Petroleum Products and Lubricants*

New work on petroleum products and lubricants under the supervision of Committee D-2 includes two new subcommittees, one to standardize test methods for plant spray oils, and the second on illuminating oils. Extreme pressure lubricants and the oiliness of motor oils have been assigned to two new sections of the subcommittee on motor oils. The projects under way in the committee involved a preparation of a general specification for gasoline with suitable variations for climatic conditions; the development of specifications for Diesel fuels from the classification prepared a year ago; and possible modifications of the tentative specifications for fuel oils.

### *Protective Coatings*

The program of Committee D-1 on Protective Coatings for Structural Materials includes the development of new tests for varnish in studies of varnish failures; a number of new tests for shellac, for which it is anticipated full cooperation will be obtained from British associations; and establishment of methods of test and possible specifications for petroleum thinners for lacquer and also physical tests for finished lacquers.

Committee D-8 on bituminous water-proofing and roofing materials plans to formulate test methods for bituminous coatings intended for coal applications and perhaps also test methods for determining the adhesion of roofing granules to asphalt coating.

Stressing the commercial value to the industry of standards, the tenth anniversary report of the Laboratories Managing Committee of the American Gas Association points out that standards work of the laboratories program has resulted in fewer models of equipment, reduced production costs, served as a guide in design and production and has stimulated consumer acceptance. The Standards section of the report follows:

# The Decade of Standardization

## A.G.A. Procedures in Developing Requirements for Appliance and Accessory Certification, as Well as Standards Evolved, Form Pattern for Profitable Industrial Regulation in Public Interest

THE key to the success of the A.G.A. Testing Laboratories lies chiefly in its standardization activities.

A decade of logical, altruistic development of consumer standards has supplied the foundation upon which the Laboratories have been able to build so rapidly the unique and impressive institution they now represent.

No national program of testing and certifying domestic equipment as safe, efficient, serviceable, convenient, and durable can proceed without the existence of scientifically framed and nationally recognized standards upon the basis of which the various features of equipment construction and performance may be judged satisfactory or otherwise.

One of the first steps, therefore, in carrying out the Laboratories' program was the organization of national committees and the development of comprehensive requirements. Experts representing producers, consumers, and every affected national general-interest group were enlisted in the preparation of approval, listing, and installation standards. So successful has the program been, that today 93 per cent of all the gas appliances sold in the United States and Canada bear the Laboratory Seal of Approval signifying complete compliance with standards which have been referred to as "'the finest and most complete set of workable consumer standards that enjoy general application in the public's interest today."

### *A. H. Hall First Chairman*

When, ten years ago, the Association appointed the late A. H. Hall as first chairman of the A.G.A. Approval Requirements Committee and set that body to the task of developing standards for the infant Laboratories to use in testing and approving appliances, standardization machinery was set in motion which was to establish a pattern for the industrial world in home appliance certification.

Today, R. B. Harper heads the A.G.A. Approval Requirements Committee, which is also a sectional committee, Project Z21, of the American Standards Association, leading national agency for the development of all classes of industrial, commercial, and consumer standards. This committee directs some 284 national authorities and gas industry executives organized into 30 requirements subcommittees.

It is the function of this Approval Requirements Committee to develop all the standards and test procedures applied by the Laboratories in testing and certifying appliances and accessories. Each of the 30 subcommittees is concerned with a specific class of equipment and attends to the preliminary preparation of new requirements and the constant revision and strengthening of existing ones for the class of appliances or accessories falling in its domain. Usually, protracted research by the Laboratories is necessary in the development and periodic revision of standards. On the average, 40 to 50 such research projects, in addition to many minor studies, are completed each year. Suggested drafts of new or modified standards are then prepared by Laboratories experts, and subjected to thorough study and discussion in subcommittee meeting.

When deemed acceptable they are submitted in printed form for criticism to all members of the Association and to all interested agencies within

**Extensions in Scope of Approval Requirements Since 1928**

| *Type of Appliance* | *Total Number of Requirements to be Met by Each Appliance* | | *Per Cent Increase* | *Per Cent Increase in Number of Requirements Not Exclusively Concerned with Safety* |
|---|---|---|---|---|
| | *1928* | *1935* | | |
| Gas Range ----- | 271 | 529 | 95 | 106 |
| Gas Water Heater | 114 | 200 | 83 | 134 |
| Gas Space Heater | 104 | 342 | 229 | 452 |
| Central Heating Gas Appliance -- | 107 | 284 | 163 | 291 |

and outside of the industry. The subcommittee later reconsiders each proposed requirement in the light of all suggestions received, and, if no further research or important changes are required, directs the standards to the Approval Requirements Committee for final adoption. Cooperating with the Approval Requirements Committee are also the Laboratories Managing Committee, the Manufacturers' Committee Advisory to Laboratories Managing Committee, and the Safety Committee, whose functions are apparent from their titles.

Inasmuch as the Approval Requirements Committee is also a sectional committee of the American Standards Association, all sets of American Gas Association requirements are submitted, immediately upon final approval, to the ASA for endorsement as American Standard. Final printed standards are distributed to affected producers of equipment at least nine months before the standards become effective. It is significant that of the 27 sets of A.G.A. approval, listing, and installation requirements now in force, 23 have already won recognition as American Standard. This fact bespeaks the universal acceptance that has been accorded the Association's Laboratories requirements.

### *Wide Representation of Committee*

The remarkable success of the Association's standardization work is quickly understood when the make-up of the Approval Requirements Committee is reviewed. Represented in the main body are six leading gas company representatives and seven executives of large gas appliance manufacturers from the United States and Canada, the Director of the Testing Laboratories, and representatives from the National Bureau of Standards, U. S. Bureau of Mines, U. S. Public Health Service, U. S. Bureau of Home Economics, American Home Economics Association, Master Plumbers Association, National Safety Council, National Association of Heating and Piping Contractors, American Institute of Architects, and Associated Factory Mutual Fire Insurance Companies. On the roster of each subcommittee are equal numbers of engineers representing manufacturing and utility companies, which men are among the highest American technical authorities on the design and use of the particular type of equipment involved.

As for the requirements themselves, the following types of gas appliances and accessories are covered by appropriate sets of standards:

Gas ranges, all types of gas water heaters, basement furnaces, boilers, floor furnaces, radiant heaters, circulators, open flame room heaters, unit heaters, gas-steam radiators, hotel and restaurant ranges, industrial gas boilers, gas refrigerators, clothes dryers, gas heated ironers, incinerators, private garage heaters, hot plates and laundry stoves, hair dryers, flexible gas tubing, thermostats, pressure regulators, burner valves, draft hoods, conversion burners, pressure and temperature relief and automatic gas shut-off valves for water heaters, semi-rigid gas appliance tubing and fittings, diaphragm and electrical gas-control valves, and thermostatic pilots.

Two additional sets of standards cover the proper installation of house piping and appliances and of conversion burners.

Each standard covers every aspect of construction and performance of the variety of gas appliance or appurtenance involved. Methods of test that are practical, scientific, and reliable, and test fuel supplies and operating conditions that represent the extremes encountered across the continent, are specified. All elements of design, construction, or performance having a bearing on safety are covered by most stringent requirements. The consumer's minimum demands for serviceability, convenience, efficiency, durability, appearance, and flexibility of function are also established. If an appliance meets all the specifications, and it must, there is no doubt concerning its worthiness and usability.

As the Laboratories have grown, so naturally have the standards they enforce been elevated and extended. The accompanying table illustrates the increases that have been made in the last seven years in the number of separate requirements which must be met by approved models of four of the most common classes of gas appliances. Further, greater proportions of requirements covering appearance, durability, convenience, and efficiency are included. Seven separate final editions of the Gas Range Approval Requirements

have been printed and successively used as testing guides by the Laboratories.

In other words, an increasing amount of attention is being given to the job of insuring that approved products are of higher quality than the public expects.

Over and above constituting the yardsticks against which testing engineers may gage appliance acceptability, the Laboratories' file of standards has meant a great deal to the gas industry and to consumers of gas. Manufacturers have been spared the large production costs of offering countless models and variations of appliances, each to suit a specific local municipal, utility, or dealer standard.

### *Seal Guides Customers*

To both manufacturers and dealers, public knowledge of what Laboratories certification means, has brought an immediate acceptance by customers of the technical excellence of goods upon sight of the Laboratory Approval Seal. The Laboratories' specifications have also been of outstanding importance to manufacturers as design aids and to Federal, State, and local regulatory bodies as authoritative guides. Approximately 40 cities have enacted legislation requiring that gas appliances sold or installed in the area under jurisdiction comply with A.G.A. standards or their equivalent. Dealers, stores, and utilities have agreed in legion to merchandise only A.G.A. certified domestic gas equipment. Collegiate, scholastic, and club groups, home economists, lecturers from the rostrum and over the radio, and the press, have all, upon occasions, recognized as buying guides, the significance of the standards behind the Laboratories' approval. Without question the Laboratories' requirements have been responsible for much good to gas users and much progress and saving on the part of the gas industry.

As an indication of the extent of committee activities each year, during the fiscal year just completed, a total of 16 meetings of requirements committees were held, and 16 lengthy committee letter ballots were completed in lieu of meetings.

One revised standard and 4 new ones approved last year were distributed; 7 sets of requirements, 6 entirely new, were approved as American Standards and published; 2 sets of recommended revisions to existing requirements were prepared; and revised standards for 2 types of appliances were completed and submitted to the American Standards Association. Revisions for 3 other standards and one complete new set were also partially completed. One new subcommittee was organized.

## ASA Approves Revisions In Steel Pipe Standards

The American Standards Association has approved revisions of the American Tentative Standard Specifications for Lap-Welded and Seamless Steel Pipe for High-Temperature Service (B36.3-1935); American Tentative Standard Specifications for Electric-Fusion-Welded Steel Pipe (Sizes 8 in. to but not including 30 in.) (B36.9-1935); and American Standard Specifications for Forge-Welded Steel Pipe (B36.6-1935). These three standards were originally approved by the American Standards Association in April, 1934.

The changes in Specifications B36.3 consist for the most part of changes in the table which shows wall thicknesses of pipe to make the table conform to the recommendation of Sectional Committee B36 on Wrought Iron and Steel Pipe; and increases the upper temperature limit from 750 F to 850 F. New requirements were inserted for test pressures in the hydrostatic test.

The revision in Specifications B36.6 consist in increasing the time prescribed in Section 8b for maintaining the pressure in the hydrostatic test from the former value of "5 seconds" to "30 seconds."

The change in Specifications B36.9 consist of modifications in the note to Section 14 with respect to the amount of projection of weld metal permitted.

Copies of the new standards are available from the American Standards Association at 25 cents a copy. ASA members are entitled to 20 per cent discount on all approved American Standards.

## List Reaffirmed Simplified Practice Recommendations

The Division of Simplified Practice, National Bureau of Standards, announces that the standing committees of the various industries concerned have reaffirmed without change the following Simplified Practice Recommendations:

| | |
|---|---|
| Clay Tiles for Floors and Walls R61-30 | 10 cents |
| Corrugated Boxes R128-31 | 5 " |
| Folding Boxes R127-31 | 5 " |
| Hospital and Institutional Cotton Textiles R74-30 | 5 " |
| Notion and Millinery Paper Bags R129-31 | 5 " |
| Open-Web Steel Joists R94-30 | 5 " |
| Packaging of Overhead Electric Railway Material R65-31 | 5 " |
| Set-Up Boxes R126-31 | 5 " |
| Warehouse Forms R34 | 10 " |

Copies of the Recommendations are available from the Superintendent of Documents, Government Printing Office, Washington, D. C.

# American School Lighting Standard Is Recommended for International Use

Adopted by the Plenary Meeting of the International Commission on Illumination, in July, the American Standards of School Lighting are now the international recommended minimum requirements.

The lighting values recommended in the standard range from 10-15 footcandles for sewing, drafting, and art rooms, to from 2-4 footcandles for recreation areas and corridors. There are four classes of recommended illumination, varying in intensity with the purpose for which the rooms are used. The four classifications are: Sewing rooms (fine work); Classrooms, desk and blackboards, laboratories and manual training; Auditoriums; and Recreation areas and corridors.

The American Standard recommended intensities are considerably higher than the intensities adopted as an international standard at Geneva, and were adopted by the International Commission on Illumination because the Geneva intensities are considered too low.

Lighting has been shown in several tests conducted during the preparation of the American Standard to have considerable effect on the progress of students. A series of tests was carried out in one city in rooms with good and poor lighting. Students were interchanged between these rooms and records kept of their work indicated forcefully that good lighting has a decided effect on the progress of students in their studies. It has also been shown that less trouble is experienced by teachers in holding the attention of their pupils in well lighted rooms than in those rooms with low intensities.

The American Standard was prepared by a committee, representing 20 different organizations, under the leadership of the Illuminating Engineering Society, and the American Institute of Architects.

## Australian Specifications for Rail Sections, etc., Issued

The Standards Association of Australia has just issued a new Australian Standard Specification for light flat-bottom rails and fishplates and bridge rails.

The specifications provide for 14, 20, 30, and 45 lb rails and 18 and 25 lb bridge rails, instead of the British Standard series of 10, 12, 14, 16, 18, and 20 lb. Drawings of each section are included with area of head, web and base, weight per yard, moment of inertia and section modulus for head and base. For fishplates, the area is shown, the weight per pair, the moment of inertia and section modulus for head and base. A drawing of the standard fishbolt is included together with a table of dimensions of fishbolts for the various weights of rails. Drawings of bridge rail sections include plan for punchings.

### Canadian Association Adds Standards Under Canadian Electrical Code

Three new specifications have been issued by the Canadian Engineering Standards Association, under Part II of the Canadian Electrical Code.

The three specifications cover transformers for luminous-tube signs and for oil-burner ignition equipment; industrial control equipment in ordinary (*i.e.* non-hazardous) locations; and soldering lugs.

Some of the dimensions for soldering lugs are slightly different from those issued by the National Electrical Manufacturers Association, but after discussion with the N.E.M.A. Codes and Standards Committee, the C.E.S.A. decided to print their own dimensions.

Dimensions given in Tables III and IV of this standard are in agreement with the N.E.M.A. standards. Some of the dimensions, which appear inconsistent, are arbitrarily chosen on account of manufacturing conditions and manufacturers are required to make special provision to conform to these dimensions.

### French Gas Industry Votes 47 Approvals

Forty-seven new types of gas-burning appliances were approved for labeling in France during the year ending with the 58th Congress of the Union Syndicale de l'Industrie du Gaz France at Marseilles in June.

Requirements which the appliances must meet in order to carry the labels are kept under review, and have all been revised, since the introduction of the labeling system, in favor of higher standards, according to *The Gas World*, London, August 24.

## Foreign Standards For Sale by ASA

Standards approved by national standardizing bodies in other countries, as well as all American standards, are either filed in the Library of the American Standards Association, or may be ordered through the ASA office.

Standards recently approved in other countries and now filed in the ASA Library, are listed below. They are printed in the language of the country indicated.

The serial number shown with the title of each standard should be used when ordering foreign standards. To simplify ordering, address a postal card or letter, with the name of the person to receive the pamphlets and the Foreign Standard Serial Number, to:

American Standards Association,
29 West 39th Street,
New York.

These standards may also be borrowed from the American Standards Association Library.

***Canada***

741. Canadian electrical code, part 1 (wiring)
742. Essential requirements and minimum standards covering electrical equipment:
Construction and test of insulated conductors for power operated radio devices
743. Construction and test of cable for luminous-tube signs and for oil-burner ignition equipment
744. Construction and test of motor-operated blowers and stokers.
745. Construction of cord sets
746. Construction and test of electrical equipment for measuring and discharge devices for explosive or flammable liquids
747. Non-heat-treated machine, carriage and plow bolts and common square and hexagon nuts

***Australia***

748. Adhesive plaster
749. Basic ward beds
750. Building bricks
751. Cutlery, spoons and forks
752. Lift code (elevators)
753. Manganese steel castings for tramway trackwork
754. Milled flooring, lining, and weatherboard
755. Microscopes
756. Shrouding
757. Surgeons' rubber gloves

***Great Britain***

758. Bull-head railway rails
759. Steel bars for the production of machined parts for general engineering purposes
760. Solid and split taper pins
761. Portable chemical fire extinguishers of the acid alkali type (excluding foam type)
762. Liquid starters and controllers for the rotor circuits of induction electric motors
763. Vitreous-enamelled steel reflectors for electric lighting, open dispersive type no. 1
764. Well glass lighting fittings (60 watt non-flameproof) for use underground in collieries
765. Translucent (diffusing) glassware illumination fittings for interior lighting
766. Compressed rock asphalt
767. Engine testing equipment
768. Reversible connectors (with earthing facilities) for portable electric appliances (for circuits up to 250 volts between any two poles)
769. Neck and flange dimensions of illumination glassware and carriers
770. Dimensions and properties of British standard equal angles, unequal angles, and T bars for structural purposes
771. Softwoods
772. Internally illuminated yellow diffusing globes for traffic control signals
773. Dimensions and workmanship of asbestos cement spigot and socket flue pipes and fittings for gas-fired appliances
774. Dimensions and workmanship of asbestos cement spigot and socket rainwater pipes, cutters, and fittings
775. Plug and socket gas connectors for portable appliances

## ASA Lowers Price for Canadian Subscriptions

**Due to the withdrawal of the special customs duty on United States magazines and periodicals going to Canada, effective January 1, 1936, the price of *Industrial Standardization* to Canadian subscribers will be $4.00 a year; libraries, colleges, and schools $2.00.**

## GM of Canada Inaugurates Safe Driving Campaign

General Motors of Canada has introduced a "Drive Carefully Campaign" among its employees. Distinguishing discs are awarded for having driven without accident for various periods.

As the status of drivers is based on a retroactive record, there are already 80 per cent who have qualified for the gold disc, the award for a full year's driving without accident.

## Prints Commerical Standard For Fiber Insulating Board

Printed copies of the revised Commercial Standard CS42-35 for Fiber Insulating Board are now available from the Superintendent of Documents, Government Printing Office, Washington, D. C., at five cents each.

The standard, which was originally adopted in 1932, was revised in June of this year to permit a lower drying temperature preparatory to determining thermal conductivity. The change in the method of test does not noticeably affect the thermal conductivity.

# Reference Samples Will Determine Whether Cast Stone Meets Standard

Fourteen colors and finishes for cast stone are provided, and procedure whereby commercial cast stone can be compared with standard reference samples is set up by the Commercial Standard for Cast Stone (CS 53-35) just approved as American Tentative Standard by the American Standards Association.

Original standard color and finish samples, as provided in the Commercial Standard, are to be retained at the National Bureau of Standards as master reference standards. Reference samples will be certified by the Cast Stone Institute as constituting satisfactory duplicates of the master samples and may be obtained from the Institute.

To determine in case of dispute whether or not cast stone complies with the various samples, the standard provides for an arbitration committee with a representative from each of the following organizations: American Institute of Architects, Portland Cement Association, the Cast Stone Institute, the Division of Clay and Silicate Products, the National Bureau of Standards, and the Division of Trade Standards of the National Bureau of Standards.

### *More Cast Stone Being Used*

Use of cast stone as a building material has been increasing in recent years, both in structures erected for governmental and public use and also for private use. One of the difficulties frequently found has been a poor match in color or in quality of cast stone furnished by different manufacturers.

To provide a proper basis for obtaining more uniform and consistent appearance in cast stone, the trade association in this field—the Cast Stone Institute—requested assistance from the National Bureau of Standards in developing a commercial standard for these characteristics.

A preliminary conference of manufacturers of cast stone, in 1932, appointed a special committee representing all interests in the industry to select proposed standard samples of cast stone for colors and textures. Fourteen standard samples were selected by the committee and distributed to various federal, state, and municipal construction departments and to private architectural offices for use in selecting and specifying color and texture of cast stone. Samples thus made available to governmental agencies and architects were used for a trial period to determine the desirability of standardizing these elements of design and decoration of buildings.

In May, 1935, a general conference of manufacturers, distributors and users considered and recommended the adoption of a Commercial Standard providing for 14 colors and finishes of cast stone.

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## Timken Roller Bearing Company Becomes ASA Company Member

The Timken Roller Bearing Company, Canton, Ohio, manufacturers of anti-friction bearings, became a Company-Member of the American Standards Association recently.

The Company, established in 1898 and later incorporated in Ohio, in 1904, has plants in Canton, Wooster, Columbus, and Gambrinus, Ohio. Subsidiary companies represent it in England, France, and Germany.

Membership in the American Standards Association will give the company all the services of the ASA available to members, including free subscriptions to INDUSTRIAL STANDARDIZATION, certain free standards, and 20 per cent discount on additional standards.

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### Few States Have Honey Standards

It depends on what State you live in whether consumers can find graded honey, replies *Consumers' Guide*, published by the Agricultural Adjustment Administration, to a request for information from a Pennsylvania consumer.

"Some States require the use of grades," the *Guide* reports. "We have no record of compulsory honey grades in Pennsylvania, but in Ohio a State law requires either U.S. grades or growers' grades to be stamped on combs.

The State Apiarist of Ohio reports that 20 per cent of all comb honey offered in individual packages is stamped U.S. No. 1; the rest bears growers' grade stamps.

"California has compulsory State grades embodying U.S. standards.

"In other States if grades are used their use is voluntary. U.S. Grade No. 1 appears most frequently on packaged comb honey in Michigan, Nevada, Washington, and Oregon.

"Beekeepers and technically minded honey-consumers can send five cents to the Superintendent of Documents, Washington, D. C., for Circular No. 24, 'United States Grades, Color Standards, and Packing Requirements for Honey.'"

# European Dye Makers Set New Color-Fastness Nomenclature

A new system of indicating fastness to light of various dyestuffs, which will make it possible to determine the light fastness of dyeings on one type of fiber, and also allows the fastness to light of dyeings on different fibers to be compared, has been worked out and adopted by the four chief dye-making concerns in Europe, according to *Silk & Rayon*, London.

The organizations which have worked out the standard light fastness scales are the I. G. Farbenindustrie A.-G., Frankfort a Main; the Fesellschaft fuer Chemische Industrie, Basel; J. R. Geigy A.-G., Basel; and the Chemische Fabrik vorm. Sandoz, Basel.

The report provides a system whereby the fastness to light of any dyestuff will be fixed by three numerals. These numerals refer to three different color intensities standing generally in the proportion of 1/3:1:2. Dyeings of intensity 1 are so chosen that they agree in intensity in all shades and on all materials, navy blue and black excepted, which are judged in fuller shades. The light fastness numbers for intensity 1 will be printed in heavy type in the publications of the four companies mentioned, and are comparable with one another. To facilitate the production of dyeings of this intensity, so-called "auxiliary types" are given in the most important shades and on the various fibers. They are only intended to serve to fix the light fastness.

The poorest fastness to light will be marked 1 and the best will be marked 8. The translation of the numerals into words will, therefore, be: 1. Small; 3. Moderate; 5. Good; 6. Very Good; 7. Excellent; and 8. Outstanding.

### *Importance Recognized 20 Years Ago*

The importance of a numerical classification of light fastness for dyes was first recognized 20 years ago, when the German Fastness Commission published the first scales for the standardization of the light fastness of dyeings on wool and cotton. Scales for silk, viscose rayon, and acetate were added later. There was no relation between the wool scale and the cotton or silk scale in regard to light fastness, however, so that it was impossible to compare the light fastness of a dye on fibers of different types.

The influence of humidity, type of fiber, temperature, etc., on the process of exposure was carefully studied, and a series of 72 especially chosen dyeings on various fibers was exposed at 20 places between latitude 65 N and 38 S and at heights up to 3694 meters above sea level. The result of this exposure test, taken under the most varied climatic conditions, proved that wool dyeings show a substantially greater uniformity when faded under varying conditions than do dyeings on other fibers, notably cotton.

### *Standardize Any Dyeings*

The new scale, which, it is claimed, will make it possible to standardize any dyeings, provides eight typical dyeings on wool. With this scale it is possible to fix the fastness to light of various dyeings at any time, because the scale is reproducible without trouble; it is independent of climatic influences; and dyeings of every intensity and color shade can be exposed on the most varied materials for purposes of comparison.

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# British Research Shows Need of Better Light for "Rough" Work

Improvement in industrial lighting leads to increased efficiency in "rough" manufacturing as well as in processes which demand careful attention and require an exacting demand upon eyesight. A joint research of the British Illumination Research Committee and the Industrial Health Research Board, on lighting for the "rough" kind of manufacturing processes shows that production can be increased with better lighting. Their report on "The Effect of Lighting on Efficiency in Rough Work" (Tile Pressing) has now been issued.

The experiments have clearly proved that, even in these cases, there is a progressive increase of output with improved illumination. Furthermore, the product is improved, and it is shown that the improvement may be expected to outweigh any additional money spent on lighting.

The results of these investigations show that the use of very low values of illumination such as are frequently used for "rough" work give the belief that good lighting is unnecessary for a job which "can almost be done in the dark," and may result in a loss of output, the value of which may be substantially greater than the cost of providing reasonably good illumination.

# Standards Set Requirements For Institution Mattresses

Minimum requirements for mattresses for use in hospitals and in institutions, accepted through the procedure of the National Bureau of Standards as Commercial Standards on September 6, were submitted to the American Standards Association and have been approved as American Tentative Standards.

Requirements and methods of test for two types of spring construction, four classes of hair filling, one class of cotton felt filling, as well as over-all nominal sizes are covered in the standard requirements for inner-spring mattresses used in hospitals. Requirements for all-curled hair mattresses for hospital use cover similar data for three classes of hair filling and also include over-all nominal sizes. The hair filling is confined to horse hair and cattle-tail hair.

The standard for mattresses for institutions includes minimum requirements and methods of test for all-curled hair mattresses and all-cotton felt mattresses. The all-curled hair type of mattress covers three grades of curled hair filling. Somewhat cheaper materials than are permitted by the Commercial Standard for Hospital Mattresses are allowed, as the hair filling mixtures all include a certain amount of hog hair. The all-cotton felt mattresses cover two grades with variations in the cotton filling and the ticking used as covering. Over-all nominal sizes of mattresses are included in both types.

### *Labeling is Part of Commercial Standard*

A certification and labeling provision was approved as part of the Commercial Standards and accepted by industry, providing that a permanent label giving the name of the company manufacturing the mattress, the class and grade of the mattress, and certifying that the mattress complies with all requirements of the Commercial Standard should be sewn in each mattress.

The development of standards for hospital and institution mattresses has had the attention of the Simplification and Standardization Committee of the American Hospital Association for several years. In October, 1933, the Association asked the assistance of the National Bureau of Standards in the development of a commercial standard and a general conference of manufacturers, distributors, and users of mattresses for hospitals and institutions was held.

On account of the amount of detail involved in specifications for mattresses, this conference found it impossible to complete the specification, and appointed a committee to continue the work of the conference. The personnel of the committee included Benjamin A. Powell, chairman, John M. Smith as representative of the American Hospital Association, and representatives of manufacturing firms producing mattresses and springs, together with representatives of Federal and State purchasing offices.

### *Prepare Separate Specifications*

In cooperation with the committee of the American Hospital Association, the special committee drafted a separate specification for Mattresses for Hospitals and for Mattresses for Institutions, which were circulated to the industry for acceptance.

Acceptances from hospitals, manufacturers, and distributors of mattresses, including a number of interested associations, estimated to represent adequate support of the standard were received and the establishment of the standard was announced September 6, 1935.

At the request of the American Hospital Association, the Commercial Standard for Mattresses for Institutions (CS 55-35) and the Commercial Standard for Mattresses for Hospitals (CS 54-35) were submitted to the American Standards Association and approved as American Tentative Standard.

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# S.A.E Non-Ferrous Specifications Revised

The widely used Society of Automotive Engineers non-ferrous metals specifications have just been carefully revised and brought up-to-date in every particular.

Most significant are the changes which have been made in the specifications for aluminums, brasses, and bronzes, according to the report of Paul V. Faragher, chairman of the Non-Ferrous Metals Division, S.A.E. Standards Committee, published in the *S.A.E. Journal*, September, 1935.

The specifications include chemical analyses, normal physical characteristics, notes on general uses, and special information and in the case of fabricated materials, dimensional specifications and tolerances.

All the revised specifications are included in the

current *S.A.E. Handbook*, which is available from the Society of Automotive Engineers, 29 West 39 Street, New York, at $5.00 per copy.

The wide demand for the non-ferrous metal specifications has led the Society to publish them separately in a complete, strongly covered booklet at $1.50 per copy (available at the above address).


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